R E P O R T R E S U M E S

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INSTITUTING A VOCATIONAL MAJOR IN NATURAL RESOURCES AT SHASTA COLLEGE.

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TWO FACTORS LED TO THE DEVELOPMENT OF A TERMINAL PROGRAM TO PREPARE STUDENTS FOR EMPLOYMENT IN OCCUPATIONS RELATED TO THE USE AND CONSERVATION OF NATURAL RESOURCES--(1) THE CONSISTENTLY LARGE NUMBERS OF STUDENTS WHO ENROLLED IN TRANSFER PROGRAMS IN THESE FIELDS BUT WHO DID NOT CONTINUE BEYOND THE JUNIOR COLLEGE, AND (2) THE LOCATION OF THE COLLEGE IN AN AREA OF HIGH EMPLOYMENT AND INTEREST IN THESE FIELDS. A SURVEY REVEALED SIX JOBS FOR WHICH A GENERALIZED MAJOR IN NATURAL RESOURCES WOULD BE APPROPRIATE--(1) FORESTRY AIDE OR TECHNICIAN, (2) FISH AND WILDLIFE ASSISTANT, (3) FISH CULTURIST, (4) GAME WARDEN, (5) RANGE TECHNICIAN, AND (6) REFUGE FOREMAN. WITHIN THE PROGRAM, WHICH INCLUDES GENERAL REQUIREMENTS FOR THE AA DEGREE AND A 20-UNIT MAJOR IN NATURAL RESOURCES, THE STUDENT HAS A CHOICE OF SEVERAL SPECIALIZED OPTIONS. (A DETAILED DESCRIPTION OF THE CURRICULUM AND ITS COMPONENT COURSES IS INCLUDED.) (HH)

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UNIVERSITY OF CALIF.
LOS ANGELES

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INSTITUTING A VOCATIONAL MAJOR IN NATURAL RESOURCES

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June, 1967

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INTRODUCTION

The economy of the three counties from which Shasta College draws most of its students is based largely upon the natural resources of the area. Activity relating to the development or regulation of our natural resources is on the increase. Within the past few years, Kimberly Clark Corporation, a wood processing firm, has completed construction on a pulp mill adding 1150 new jobs to an industry which leads all others in economic importance to our area. Utilization of water resources was expanded with the construction of three major dams: Trinity, Whiskeytown, and Black Butte. In addition, Pacific Gas and Electric Company has recently completed a series of dams on the Pit River adding new reservoirs to an already extensive power and water storage system. The economic importance of these water resources was further enhanced when it was decided to locate the regional office of the state Department of Water Resources in Red Bluff. This agency presently employees 113 people and will raise that figure to 1000 employees within ten years. The recreational usage of the lakes, streams and woodlands of northern California has also increased with state population growth and the improvement of highways linking the north state with the major population areas.

In the fall of 1966, Shasta College instituted a new vocational major designed to prepare students for jobs in businesses and agencies associated with the development or regulation of these natural resources. From the standpoint of student acceptance, the program

was an immediate success. Over seventy students declared a vocational major in natural resources and all classes were closed before registration was completed. This student acceptance was not altogether surprising. At Shasta College we have consistently had large numbers of students who begin college with the intention of completing a professional major in forestry, fish and game, or other majors related to the management of natural resources. And yet, despite the initial high enrollment in transfer programs, few of these students have gone on to state colleges or the university. A look at the test records of students who enroll in our two unit General Forestry course suggests why. This two unit offering is a survey course for students planning a professional career in forestry and other natural resource majors. Until the fall of 1966, when the vocational major in natural resources was instituted, this was the only course offered by Shasta College to students with an interest in natural resources occupations. We searched the school records for the ACT test scores of all students enrolled in this course during the school year which preceded the institution of the new vocational major. The ACT test is used nation-wide to measure the academic development of college students and is the entrance test used by Shasta College. The following table shows how students in the General Forestry course scored on this test when compared with typical college freshmen in four year programs.

TABLE 1

ACT Scores of General Forestry Students

ACT Composite Percentile Score	Number of Students Receiving Score
76% and Above	3
Between 51% and 75%	10
Between 26% and 50%	26
25% and Below	34

The test scores suggest that the greater proportion of these students would have difficulty competing with other college students in four year programs. The number of students who eventually transfer in forestry bears this out. Our records indicate that only slightly more than 20 percent of these students eventually transfer to a four year college

To summarize, Shasta College had two compelling reasons for instituting a vocational program in natural resources. First, we had become aware of a growing, if unspecified, job market for students with the kind of training provided by the natural resources major. And second, we had large numbers of students with interests in the field of natural resources whose educational needs we were not meeting.

Purpose of the Study

One of the most persistent problems in vocational education programs is the inability to generalize. If such programs are to

be successful, they must be practical and suited to the industries and agencies they are intended to serve. This is especially true of non-specific majors such as our vocational major in natural resources designed to prepare students for a variety of jobs. Although several organizations were invited to the college to discuss the program prior to its institution (see Appendix I), school officials were aware that the information gained from this discussion was insufficient and that a more systematic study of the program would have to follow. The information was considered inadequate as a guide in educational planning for at least two reasons. First, the agencies and businesses contacted were not completely representative of the organizations we intended the program to serve. And second, the discussion tended to center around the general acceptance of the program by the organizations and not upon the specific educational needs of students who would take jobs with the organizations. Consequently, the curriculum initially devised for the program cannot be considered final. One of the major purposes of this study was to examine the relationship between the natural resources curriculum and the training needs of specific jobs.

A second and related purpose of the study was to estimate the job placement potential in the Shasta College service area for graduates of the program. It was previously indicated that this vocational program has been received with great interest by the students. It would, however, be a tragic mistake to allow student interest to be the determining factor in the number of students we train.

Since classes in the major were filled to capacity and beyond immediately upon their introduction, it would seem that we could be in real danger of training more students than there are jobs to be filled. It is therefore as important to know how many students we can reasonably expect to place as it is to know the training needs of the jobs.

A third purpose of the study is one inherent in most surveys which accompany the introduction of a vocational program but is seldom explicitly stated. This is simply to make initial contact with the potential employer and make him aware of the existence of the program. Vocational programs not only must be developed, they must be sold. We felt that this usually tacit purpose should be formally incorporated since it has important implications for the design of the study.

PROCEDURE

The first step in the development of this study was to construct a list of all businesses and agencies in or closely adjacent to the Shasta Joint Junior College District whose principal activity was related to the natural resources curriculum. Agencies and businesses engaged in fish and game regulation or management, forestry, wood processing, range management, rural recreation, or public relations for an outdoor recreational enterprise were listed. To obtain an accurate estimate of available jobs, we endeavored to contact officials in each of the firms we had listed. This was essentially carried out although some of the smaller wood processing

firms and rural recreation enterprises were removed from the list when it became apparent that placement of students with these firms was highly unlikely. The list is shown in Appendix II.

To insure that the greatest benifit would be derived from the initial contact with potential employers, it was decided that a standardized interview would be used in the study. For the purpose of the study this seemed far better, if more time consuming, than the less personal mailed questionnaire. All interviews were conducted by a member of the teaching staff in the natural resources major. It was felt that this procedure would maximize communication and give the teaching staff additional insight into the training needs of their students. The counselor chiefly responsible for assisting vocational students in their educational planning accompanied the teaching staff member on several of these interviews and assisted in analyzing the data.

It was suggested previously that the title of the vocational major under investigation, "Natural Resources", does not refer directly to the activity of any given job, but rather to the general activity of a variety of businesses and government agencies. Many of the businesses and agencies contacted had vocational level positions which were not directly related to the natural resources curriculum and might be more appropriately filled by students from different vocational majors. To avoid an indiscriminate listing of all positions which could be filled with junior college graduates, a clear distinction between positions in a given organization was

needed. It was decided that a survey instrument incorporating questions relating to specific tasks performed on the various jobs would be appropriate for this purpose. Two standardized interviews were constructed for this study.

One standardized interview was developed for use with the employer or personnel manager of the agency or business. The interview record form is shown in Appendix III. In this interview, general information on the jobs in the organization was gathered. This included the number of the people working for the firm, the various job titles held by persons in the firm, the employers statement of the skills and experience necessary for the various positions, and the anticipated openings in the various positions.

A second standardized interview was developed to be used with employees of the firm. In this interview the employee was asked to describe the major duties and responsibilities of the job, working conditions on the job, the method by which he was selected for the job, and other important characteristics.

When the interviews were completed, the various job titles obtained in the interviews were listed. The number of positions encountered for each job was tabulated. The jobs were then assigned to one of three classifications: If the knowledge and skills developed in twenty or more units of the natural resources curriculum was essential to functioning on the job, the job was placed in category one. Since twenty units is the accepted minimum standard for a vocational major at Shasta College this seemed appropriate. It would be unrealistic to label a course of study a "major" where the

essential courses in the program constitute less than a third of the course work.

Jobs were listed in the second category if the course work in natural resources would be useful, but not essential. Jobs were placed in this category if skills in some of the natural resources courses were required for the job, but not enough to constitute a twenty unit vocational major. Jobs in this category were either too narrowly specialized to require two years of preparation (such as "lumber grader") or they were jobs where, although some course work in the major would be useful, the principal duties did not correspond to the natural resources curriculum.

Jobs were listed in a third category if the course work in natural resources was marginally related. If the course work in natural resources would serve only to acquaint the student with the general role of the organization and would be of little or no value in either getting the job over other applicants or functioning on the job once the position was obtained, the job was placed in this category. To be completely consistent, all jobs in the organizations surveyed other than those listed in the first two categories should appear in this one. This would make the list too long and pointless. What has been listed is the titles of jobs which by their title seem to be related to the natural resources curriculum but upon closer inspection of the duties depend on other kinds of training. It is important to note that all but eighteen of the 130 positions listed in this category are technical engineering jobs.

RESULTS

The following table outlines the findings derived from the analysis described in the preceding section.

TABLE 2

Importance of Curriculum to Duties and Tasks of Jobs In Organizations Relating to Natural Resources

Category One--Curriculum Essential

Job Title	Positions	
Forestry Technician	90	
Game Warden	38	
Fish and Wildlife Assistant	31	
Fish Culturist	19	Total=182
Range Technician	2	
Game Refuge Foreman	2	

Category Two--Curriculum Useful

Job Title	Positions	
Tank Truck Operator	79	
Scaler	53	
Lumber Grader	37	
Fire Control Aid	22	
Recreation Aid	12	
Recreation Supervisor	3	
Park Guide	3	
Park Attendant	3	Total=212

Category Three--Marginally Related

Job Title	Positions	
Engineering Aid	67	
Saw Filer	18	
Soil Conservation Technician	15	
Conservation Engineering Technician	15	
Water Resources Technician	10	
Materials Aid	3	
Geologic Aid	2	Total=130

The findings presented in table two show six jobs in which knowledge and skills can be considered "essential" under the definition used by the study.

In the following section, the six jobs which require twenty units or more of the course work in natural resources are discussed in the order of the frequency of positions indicated by our survey. The job for which there was the greatest number of positions is discussed first. The information below is not intended to be complete descriptions of the jobs. Only that information which is relavent to curriculum and placement is discussed. More complete information on these jobs is in the possession of Mr. David DuBose, instructor in natural resources courses at Shasta College.

Job Title: Forestry Aid or Technician Positions: 90

Principal Duties and Responsibilities: The duties vary somewhat with the position. In private organizations activities such as cruising and scaling timber, surveying lines and roads are likely to occupy most of the worker's time. With the U.S. Forest Service, which accounts for the majority of the positions, the work is broader. "Forestry technicians perform nonprofessional and technical forestry work in connection with the multiple-use management, conservation, development, utilization, and protection of the forest resources; or perform similar work in forestry research activities."

Pay Range: Pay for the work varies with the position and the amount of experience and education. At the GS-4 level in federal service where our graduates would qualify, the beginning salary is $4776 per year. The highest salary recorded for this job in the survey was $7810 a year. Other areas have persons with technical level training making $10,000 a year.

Placement Potential: Most organizations contacted were dependent upon a parent organization in determining their final planning for manpower needs; they were therefore unable to release exact figures. Many Forest Service districts use their technical level jobs as summer positions for four year forestry programs: where the supply of professional trainees in high openings are limited. One Forest Service official indicated that while districts vary in their hiring policy with regard to forestry technicians, districts are finding they can free professional foresters for other work. Further, professional foresters must move about to get the varied experience needed for promotion; the technician tends to give continuity to the programs of a district. For these reasons the use of technicians is on the increase. Taking the region as a whole the ratio of full-time technicians to professional foresters is three to one. The students trained in technical forestry would also qualify for positions on fire suppression crews. Table II indicates that many such positions exist in the area, but listing them under the "forestry technician" title seemed inaccurate since positions on fire crews might be more appropriatly thought of as being related to the Fire Science major here at the college.

Relation of Natural Resources Curriculum to the Job: According to the personnel officer in the regional office of the U.S. Forest Service, students with this major would have excellent employment opportunities with the U.S. Forest Service if the training is geared specifically to the tasks which will be performed on the job. In his opinion, the present curriculum appears to be too general. The more

specific the skills developed, the more likely the employee will be retained on a year around basis (skills in drafting and timber stand improvement are useful in this respect.)

Job Title: Fish and Wildlife Assistant Positions: 31

Principal Duties and Responsibilities: This is also a job with the Department of Fish and Game. The work is described as "Hatching, rearing and feeding of fish or game birds; cleaning troughs, ponds, pens and other fish or wildlife enclosures; liberating game birds or planting fish; removing barriers from streams, installing and maintaining fish screens, ladders, and traps; planting or cultivating wildlife cover or forage plants; installing and maintaining artificial watering devices and building protective cover for wild birds; collecting field data on fish or wildlife by censuses and other means; trapping, tagging, or marking of fish and wildlife; collecting fish and wildlife samples and specimens; as required, operates automobiles, trucks, tractors, pumps, fish loaders, and other types of mechanical equipment; keeps records; and does other work as required."

Pay Range: The pay for this job varies from $5820 to $6360.

Placement Potential: This job offers the best employment opportunity in the Department of Fish and Game. The applicant would be eligible on a state wide basis. The fact that his training was specifically related to the job would be in his favor on the exam.

Relation of this job to the Natural Resources curriculum: In interviewing officials from the Department of Fish and Game, it was pointed out that most of the opportunity for vocational students

is working in fish hatcheries. Most positions in game management are filled by graduates of four year programs. As was previously stated, this job offers a promotional opportunity to the job of Game Warden. It would be appropriate for the student to consider including the specified police science courses in his program if he is otherwise physically qualified. A second promotional opportunity exists to the job of Fish Culturist. For this position the police science training would not be necessary.

Job Title: Fish Culturist Positions: 19

Principal Duties and Responsibilities: "A Fish Culturist performs work in a major phase of the operation of a fish hatchery including installing and maintaining racks and traps; spawning fish; incubating eggs; hatching fish; feeding fish; cleaning troughs and equipment; grading and counting fish; maintaining hatchery grounds; keeping records; preparing reports; assisting in collecting field data on and fish and habitat; and does other work as required."

Pay Range: The pay for this job varies from $5772 to $7020 per year.

Relation of this job to the Natural Resources curriculum: The student would not be eligible for this job directly out of school. Ordinarily two years of experience is necessary in the Fish and Game Assistant job before application can be made for the job of Fish Culturist. One year of the experience requirement can be eliminated, however, with two years of college in courses in biological sciences or fisheries management.

Job Title: Game Warden Positions: 38

Principal Duties and Responsibilities: Enforces and prevents violations of laws and regulations relating to the conservation and protection of fish and wildlife. In connection with these duties the game warden issues warnings and citation, serves warrants, makes arrests and prepares and presents evidence in court actions. He will also investigate wildlife crop dammage, advise landowners on counter-measures and issue kill permits. He feeds game birds or animals during unusual weather conditions and may assist in the planning of controlled hunts. He collects and reports information on the condition of fish and wildlife and their habitat. He may assist in fish planting and he may be called upon to speak at meetings of sportsmen's, civic, and other groups to explain fish and game laws and regulations and the Department's conservation programs.

Pay Range: The minimum salary is $7020 per year and the maximum is $8532 per year.

Placement Potential: Officials of the Department of Fish and Game state that the majority of these positions are filled from the Fish and Game Assistant job. Again, no exact figures are possible, but the applicant taking the test is eligible for positions on a state wide basis.

Special Requirements: Some screening must be conducted before students are encouraged to look to this job as a vocational objective. The applicant must have "ability to swim at least 100 yards and ability to row a boat; strength, endurance, and agility; normal hearing; visual acuity of not less than 20/40 in both eyes provided

the defective vision is not due to active or progressive organic disease; normal color vision; height not less than 5'8" and waist measurement not in excess of the measurement of the chest in repose. Age requirement minimum 21 years, maximum 40 years as provided by Section 854 of the California Fish and Game Code."

Relation of Natural Resources Curriculum to the Job: Although many of the courses necessary for preparing for this job are offered in the police science program at the college, it does not require enough of the police science units to constitute a police science major. It is quite important that a student preparing for this vocational objective have strong preparation in natural resources courses. Not only is an understanding of fish and wildlife critical to the job, but the student is not likely to be old enough to apply when he finishes his training. Since holding the Fish and Wildlife Assistant job for two years is one of the specific recommendations of the California State Personnel Board as a possible way of qualifying for the job, this preparation would seem most appropriate.

Job Title: Range Technician Positions: 2

Principal Duties and Responsibilities: The work consists largely of conducting surveys to measure the effects of brush control and removal programs. Sample plots are layed out and tallies of the animal life which can be supported on the improved range are made. The technician must have an understanding of aerial photographs and maps to function on the job.

Pay Range: The two technicians included in the sample were recently hired at the GS-4 level at a yearly salary of $4776 a year. The GS-7 level is probably the highest which could be expected in this specialization with two years of college.

Entry Potential: The U. S. Bureau of Land Management, with a total of 30 positions, employs only these two technicians. We were unable to find any other openings in the college service area which employed people with this job title.

Relation of This Job to the Natural Resources Curriculum: Both state and federal agencies contacted indicated that few opportunities exist for the A.A. Degree graduate in range management in this area.

Job Title: Refuge Foreman Positions: 2

Principal Duties and Responsibilities: Supervises the planting and irrigation of crops for birds in a game refuge. Local farmers are usually hired on a temporary basis for the actual planting of the crops.

Pay Range: Pay for this job was $7800 per year. No minimum was indicated. It was indicated that this was top pay for the job.

Placement Potential: No position has been open in this job for the past ten years.

Relation of This Job to the Natural Resources Curriculum: Although several courses in the natural resources curriculum appeared appropriate, the low placement potential makes further discussion meaningless.

RECOMMENDATIONS

Several recommendations seem warranted on the basis of the findings of this study. While staffing problems and coordination between departments are likely to be limiting factors in bringing about some of the suggested changes, it is felt the following recommendations merit the attention of school officials and the Natural Resources advisory committee.

1. It is recommended that the options of Range Technology, Rural Recreation, and Public Relations in the Natural Resouces major be eliminated: As table 2 indicates, few jobs exist in the college district for which such training is applicable. While it is true that some students with special advertising talent might find jobs in public relations, and also true that students choosing a rural recreation or range technology options might use the training if they have sizable acerage they are converting to recreational use, most students have neither the talent nor the real estate to make use of these specializations. It is suggested that these options be discontinued to avoid unrealistic planning on the part of students.

2. It is recommended that the Fish and Game Assistant option and the Game Warden option be combined: Both these options refer to specific job titles for the California State Department of Fish and Game. While both of these are listed as entry level jobs with the Department, six of the nine Game Warden positions open in the past year were filled by persons with the job of Fish and Game Assistant.

Those students who could not meet the physical requirements for the Game Warden position or who prefered work in fisheries could omit the police science units from their program and substitute courses which would prepare them for the job of Fish Culturist. Job opportunities would indicate that more courses in fisheries and fewer in game or range management would be appropriate.

3. <u>It is recommended that greater emphasis be given to the Forestry option of the Natural Resources major and that the training offered the student be more specific to the tasks performed on the job</u>: The student should certainly understand the phase of a logging operation in which he is likely to take part. For this reason scaling, marking, and identification of timber should be taught as specific skills. Timber stand improvement is also likely to be part of the technical forester's job. Techniques in tree planting, thinning, pruning, and disease control should be mastered. It would seem appropriate to include courses which would make the student familiar with the operation and maintenance of basic fire supression equipment (Fire Hydraulics and Fire Apparatus and Equipment) to increase his chances of getting the important first job. A separate lab might well be offered in the General Surveying course for Natural Resources students which would emphasize pacing, use of the compass, use of maps and aerial photo interpretation. To make room in the student's course of study for learning these specific skills it would seem that some of the general life science courses (Botany, Zoology, General Biology) could be eliminate and some of the general natural resources courses (Forest Management and Range Management, Natural Resources Conservation,

and Conservation Administration) could be combined and offered for fewer units.

4. It is recommended that the Wood Technology option remain an in-service training program in the evening division as it presently is: In discussing the feasibility of offering this option as a pre-service vocational major with officials of wood processing firms, it became apparent that students would have little or no advantage over any other applicant for a specific job. Almost all firms have union agreements which must be honored. Seniority plays as important a role in qualifying for a given job as pre-service training in most mills. In addition, most jobs are of such a specific nature that on-the-job training is a far more practical approach to qualifying for the job. It would appear that such wood technology courses as might be offered be suggested by officials of these firms. Students from the day program might be encouraged to include some of these courses in their study list where time permits, but this option should be clearly specified as in-service training to avoid unrealistic planning on the part of students.

SUMMARY

The two basic purposes of this study were, first, to gain information on job requirements for planning the Natural Resources Curriculum, and second, to estimate placement opportunities for students in the major. It was found that many of the initial courses planned for the major tended to focus on the general role of agencies and businesses and not upon the specific jobs open to vocational students

in those organizations. When specific job posibilities were considered, it was found that the Natural Resources options might be compressed from seven to two. Students would have better employment opportunities if they had each developed specific skills for a group of closly related jobs. Mention should be made of the third and less tangible purpose of the study--to make employers aware of the existence of the program. It is felt that the personal contacts made with employers to find what was needed in the actual work and the willingness of school officials to change the program to fit these needs will certainly improve the placement opportunities for students in this vocational major.

APPENDIX I

February 17, 1966

Dear Mr.

For several years Shasta College has been concerned about the number of students attending the college who have indicated a strong interest in such careers as forestry, fish and wildlife, range management, recreation management, wood technology and others. Many of these students do not transfer to four-year colleges; they either drop out of the college or change into other occupational pursuits because of the lack of course offerings designed to meet the needs and interests of vocational students interested in less than a four-year technical degree.

The college staff, in studying these occupations, identified certain basic requirements that are common to all of them. Since the common core of these requirements seemed to center around natural resources, a program of exploratory nature, with courses built around natural resources, has been developed. By placing the student in these courses and offering certain other optional courses, plus a strong on-the-job work experience program, it was felt that the student's interests could be met and the industry's needs served.

As there is no comparable program offered in any junior college in the United States there are no guidelines to follow. This will permit a pilot program to fit this area's needs and allow exploration of new ideas.

The administration and staff of the college join with the Board of Trustees in inviting you to meet and review the work already done and make recommendations on its improvement. It is hoped, through such a meeting, to explore the scope and possibilities of such a program with you.

Included with this letter are suggested courses and requirements for your perusal. The meeting has been set for Thursday, February 24th at 3:00 P.M. in the Faculty Dining Room at Shasta College.

Sincerely,

Gilbert A. Collyer
District Superintendent-President

dg

enc.

PLANNING QUESTIONNAIRE
NATURAL RESOURCES MAJOR
SHASTA COLLEGE

NAME:_____ ORGANIZATION:_____

ADDRESS:_____ PHONE:_____

Because of the wide range of experiences and training required to develop technicians for the Natural Resources occupations, cooperation between industry, governmental agencies, private individuals, and Shasta College is essential. Some of this cooperation could be in the forms of:

1. Providing work experience (on-the-job) training.
2. Making available outstanding individuals to instruct in specialized areas.
3. Serving on a Natural Resources advisory committee.
4. Or others.

1. Would your organization employ students who had successfully completed technician training in one of the Natural Resources options? _____

   Remarks:

2. Would your organization be willing to provide work experience (on-the-job) training while the student is enrolled? _____

   Remarks:

3. Would there be opportunity for summer employment in your organization? _____

   Remarks:

4. Could your organization aid the college by making available specialists to instruct in technical areas? _____

   Remarks:

5. Would you be willing to serve or have a member of your organization serve on an ad hoc advisory committee on Natural Resources? _____

   Remarks:

6. Your comments as to improvements of this program (additions, deletions, changes, etc.)

APPENDIX II

Businesses and Organizations Contacted in This Study

California State:

Division of Beaches and Parks
Shasta State Historical Monument
Shasta, California

Department of Fish and Game
627 Cyprus Avenue
Redding, California

Division of Forestry
Sierra-Cascade District Headquarters
1000 Cyprus Avenue
Redding, California

Department of Water Resources
2135 Akard Avenue
Redding, California

Corona Box and Lumber Company
Main Office
Olive Road and Rawson Avenue
Red Bluff, California

Diamond National Corporation
1155 Court Street
Redding, California

Dye Creek Preserve
Wayne Long, Manager
Rt. 1, Box 831
Red Bluff, California

Forty Niner Door Stock Company
Olive Road and Rawson Avenue
Red Bluff, California

Lassen Volcanic National Park
Headquarters Building
Mineral, California

Lorenz Lumber Company
Burney
California

M B & C Lumber Incorporation
Olive Road and Rawson Avenue
Red Bluff, California

Main Lumber Company
2375 Garden Avenue
Redding, California

Pacific Gas & Electric Company
Recreation Division
1255 Sacramento
Redding, California

Paul Bunyan Lumber Company
South Anderson
California

Scott Lumber Company, Inc.
Burney
California

Shasta-Cascade Wonderland Association
South Market and Parkview
Redding, California

United States:

Forest Service:

Corning Ranger Station
1112 Solano
Corning, California

Hayfork Distric
Hayfork, California

Federal Building
Red Bluff, California

Pacific S.W. Forest & Range
Experimental Station
1615 Continental
Redding, California

Shasta Lake
Antler Fire Control Station
Lakeshore, California

Willows District Ranger
Federal Building
Willows, California

Bureau of Land Management
2460 Athens Avenue
Redding, California

Bureau of Reclamation:

238 South Main Street
Red Bluff, California

Willows Field Office
112A South Butte Street
Willows, California

Soil Conservation Service
Federal Building
Red Bluff, California

Bureau of Sport Fisheries & Wildlife
Sacramento National Wildlife Refuge
Highway 99W South
Willows, California

United States Plywood Corporation
Highway 99 North
Anderson, California

Whiskeytown National Recreation Area
Administration Office
John F. Kennedy Memorial Drive
Whiskeytown, California

(Name and address of firm)

APPENDIX III

Interview Record Form

At Shasta College we are attempting to develop a vocational training program which will enable the student to function effectively as an employee in an organization such as your own as a skilled worker. Could we begin by listing the different positions your organization has which require training but are open to persons with less than four years of college?

(List Job Titles)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

If you were hiring now for the first job we listed, what is the minimum training or experience you would expect of the person filling the position?

(Refer to number above)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

This sheet describes the courses we offer in the Natural Resources major. Would you mind going through it with me to determine which courses would meet the training or experience requirements listed above? (where requirements can be met by course work, indicate by placing the course number over the requirement.

Related education: "Some of your employees are likely to need skills in addition to those gained in natural resources training. I have some questions on additional skills an employee might need. I would like you to tell me in which job these skills might be needed and in which it would just be desirable.

1. In which of the jobs we have discussed is the employee required to submit written reports? (Specify job number, get copy of form or describe the nature of report)

2. In which job is the employee required to keep a set of books or understand an accounting procedure?

3. In which job is the employee required to have direct contact with the public? Could you describe the duties?

4. What equipment or machines, including business machines, is the employee required to understand, operate, or maintain?

Machine or equipment	Employee responsibility

Questions on Employment outlook:

1. How many of these jobs have you filled in the past year? (Show job number and the number hired.)

_____

_____

2. What is the outlook for new openings in the next two year period? (show position and the number to be hired.)

_____

_____

Reasons why we would hope you would look to Shasta College in the future as a source of new employees:

1. We will have seen the boy's work for two years and can help you evaluate.

2. The boy will have demonstrated he can stick with a program for two years; this will tell you something about his reliability and interest in the work.

3. He will have had a good basic training program-our grading policy will give you an indication of what he is capable of doing.

Interview Record Form

(Employee)

A. Job Title or Name: _____

B. Present Methods and Procedures of Work:
   1. Duties and tasks worker performs: _____

   2. Supervision received and given: _____

   3. Job relationships other than supervision: _____

   4. Materials, supplies, and machines the worker uses: _____

C. Working Conditions:
   1. Place of work--describe (inside--outside, etc.): _____

      Dangerous or harmful aspects: _____

   2. Day, week and hours of the work period: _____

   3. Amount and method of pay: _____

   4. Opportunities for promotion or advancement: _____

   5. Fringe benefits: health plan _____, Vacation _____

      retirement _____, other: _____

D. Methods of selection for the position:
   1. Tests: _____
   2. Interview: _____
   3. Transfer or promotion: _____
   4. Other: _____

APPENDIX IV

CATALOGUE OUTLINE AND COURSE DESCRIPTIONS

Natural Resources

First Year	1st Sem.	2nd Sem.
Dynamics of Group Disc. 56	3	
Report Writing 38		3
Natural Resource Conservation 60	3	
Soils 23		3
Fish & Wildlife Cons. 70	3	
Nat. Resources Recreation 61		3
Forest Propagation and Identification	3	
Water Resources 64		2
Intro to College 40	1	
Hygiene 11		2
Electives	2	2
P. E.	½	½
	15½	15½

Second Year	1st Sem.	2nd Sem.
U.S. History & Govt. 17AB	3	3
Conservation Admin. 63	2	
Natural Resource Survey 62	3	
Forest Products 68	3	
Range Management 22		3
Forest Management 50	3	
Natural Resource Mech.		3
Work Experience Seminar	1	
Work Experience	2	2
Electives	1	1
P. E.	½	½
	15½	15½

Natural Resources Option

Fish & Game Assistant

Omit: Forest Propagation and Identification, Natural Resources Surveying, and Forest Products Technology
Add: Zoology, Botany or General Biology, and Crop Production 21A.

Forestry

Omit: Forest Products Technology and Water Resources.
Add: General Forestry, Botany, Zoology or General Biology, Crop Production.

Game Warden

Omit: Forest Propagation and Identification, Natural Resources Surveying, Forest Products Technology, Forest Management, Water Resources, Natural Resource Mechanics and Soils.
Add: Criminal Evidence, Criminal Investigation, Administration of Justice, Firearms, Criminal Law and Applied Psychology.

Public Relations

Omit: Forest Propagation and Identification, Natural Resources Surveying, Forest Technology, Natural Resources Mechanics and Soils.
Add: Advertising, Salesmanship, Introduction to Journalism, Publicity and News Service, Photography, and Applied Psychology.

Rural Recreation

Omit: Forest Products Technology, Natural Resources Surveying, Forest Management and Forest Propagation and Identification.
Add: Salesmanship, Advertising, Merchandising, Landscape Design, Agriculture Marketing and Agriculture Math.

Wood Technology

Omit: Fish & Wildlife Conservation, Natural Resources Recreation, Natural Resources Surveying, Range Management, Soils, and Natural Resources Mechanics and Water Resources.
Add: General Chemistry, Botany or General Biology, Applied Psychology, Typing, and Algebra or Agriculture Math.

Range Technology

Omit: Forest Propagation and Identification and Forest Products Technology.
Add: Crop Production 21A, Feeds and Feeding, and Livestock 12A.

Course Descriptions

Feeds and Feeding 11 (4)
A study of the constituents of feed, carbohydrates, proteins, fats, minerals, vitamins and water; their utilization by the animal body. The digestive system, the process of digestion and assimilation of the various constituents. A study of various feeds and their individual values. Computations of standard rations for livestock and the problems involved in practical feeding. (3 lect-1 lab.)

Livestock Production 12A-12B (4-4)
A study of beef cattle production, swine production, sheep production, and dairy production in the United States, but with emphasis upon California conditions. Breeds of livestock will be considered, feeding and management of those enterprises, the planning of an economic unit for each of those major livestock classes and the marketing of the product. (3lect-1 lab.)

Crop Production 21A-21B (4-4)
A study of the basic forage crops, including irrigated pastures, alfalfa, and the cereal hays, silage crops and sudan. Also will be the various field crops, major cereal crops and cultural and economical factors such as soil management, harvesting methods, cost of production, rotation, cultivation and irrigation practices, variety of crops, seed selection and pest control. (3 lect-1 lab.)

Range Management 22 (3)
Rangelands and forage crops of the Western United States. Basic principles of range management and their relationships to the management and their relationships to the management of wildlands for

livestock production, wildlife, water, recreation, and timber. Development of plans for effective production and utilization of range forage on selected ranges of the region. (2 lectures, 1 lab.)

Soils 23 (3)
Deals with origin, formation, composition, classification, and the physical, chemical and biological properties of soils; effect of soil and cultural practices toward soil productivity. The management of the California soils effecting maximum conservation as well as yield. (3 lect.)

Natural Resources Mechanics 32 (3)
Safety, operation and maintenance of trucks, tractors, equipment and tools. Maintenance of buildings, including plumbing and painting. The use of hand and power tools for wood, metal and concrete. (1 lect., 2 lab.)

Natural Resources Conservation 60 (2)
A study of the history and development of conservation of the United States and human population in relation to resources. It would also cover government programs and legislation as pertaining to conservation. Practical conservation practices applicable to improving natural resources, including soil, water, forest and rangeland. (2 lect.)

Natural Resources Recreation 61 (3)
Development and management of rural recreational enterprises. Including a study of National and State parks, forests and historical sites. Practical recreational practices including the development and operation of rural picnic, swimming, boating, horseback riding, game sport areas, hunting preserves and fishing waters. The organization and financing of federal, state, and private conservation programs. An analysis of conservation problems including tourists, advertising and record keeping. (2 lect. 1 lab.)

Natural Resources Surveying 62 (3)
The use of basic surveying equipment such as hand compass, staff compass, abneys, topographic and engineer's chain, use of the level and transit and the drafting of field data and maps. (2 lect., 1 lab.)

Conservation Administration 63 (2)
A analysis of conservation problems and public relations. The organization and financing of federal, state, and private conservation programs including a study of both federal and state fish and game laws. (2 lect.)

Water Resources 64 (2)
Scope, magnitude and significance of water resources. A study of the federal, state and private water programs and proplems. (2 lect.)

Forest Management 66 (3)
The development of forestry and the lumber industry, management and utilization of the forest resources, the development of forests, and the study of trees and shrubs in the U. S. and California in particular, including basic silviculture, timber sampling methods, forest protection and fire control, forest valuation and economies. (2 lect., 1 lab.)

Forest Propagation and Identification (3)
Methods of treatment of forest stands to insure continuous growth pertaining to forestry nursery management and the regeneration by artificial means. Dealing also with planting and land preparation for timber as well as Christmas tree stands. The identification and study of forest species and types common to western forests will be covered. (2 lect., 1 lab.)

Forest Products Technology 68 (3)
A review of the history of lumber and wood products industry, covering the wide range of products made or manufactured by the industry. The changes occuring in the field, job opportunities and skills needed. (2 lect., 1 lab.)

Wood Processing 69A-69B (3-3)
A study of the characteristics of the principal native species of wood. Basic structure of wood including chemical composition. The operation of certain wood processing machines dealing with special manufacturing processes. Skills such as grading, sampling and tallying would be stressed.

Fish and Wildlife Conservation 70 (3)
The study of plant and animal ecology from the standpoint of fish and wildlife management. Dealing with the main fish and game animals of California and the Pacific Coast, including waterfowl, upland game birds, and the various types of fresh water fish. The practical aspects of wildlife conservation and management would be emphasized. (The lab would include several full day or weekend field trips to game preserves and management areas. (2 lect., 1 lab.)